

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (original) Device for purifying machining liquids for electroerosion machines (10) provided with an electrode (17) adapted to machine a piece (15), the machining liquid (14) being constituted by a dielectric liquid containing at least first particles (39) of an additive adapted to facilitate electroerosion and second particles (38) of contamination arising from the electrode (17) and/or from the piece (15) and having a higher density than the first particles (39), characterized by the fact that the device comprises at least one ultrasonic decantation device (11) comprising a first decantation receptacle (30) for the machining liquid (14) in which is disposed a first ultrasonic emission member (31) connected to a first ultrasonic generator (33) whose power can be adjusted such that the second particles (38) decant, whilst the first particles (39) remain in suspension in the dielectric liquid.

2. (original) Device according to claim 1, characterized by the fact that it comprises supply means (34, 35) for supplying contaminated machining liquid into the first decantation receptacle (30) and at least one opening (36)

provided in this latter for discharging purified machining liquid containing the first particles (39).

3. (original) Device according to claim 2, characterized by the fact that it comprises supplemental means (40) to separate third particles (41) of contamination constituted by colloidal carbon from the decomposition of the machining liquid, these supplemental means (40) comprising a second ultrasonic decantation device (45) with a second decantation receptacle (50) in which is disposed a second ultrasonic emission member (51) connected to a second ultrasonic generator (53), the power of this latter being adjusted such that the first particles (39) decant, whilst the third particles (41) remain in suspension in the machining liquid, this second decantation receptacle (50) comprising an inlet connected to said opening (36).

4. (original) Device according to claim 3, characterized by the fact that the supplemental means (40) comprise a mixing receptacle (47) with mixing members (60), filtering elements (46) for the machining liquid obtained by decantation at the outlet of the second decantation receptacle (50) and arranged to retain by filtration the third particles (41), a supply conduit (59) for the filtered dielectric liquid from the filtration elements (46) to said mixing receptacle (47) and extraction transport means (55) arranged to transport the

first particles (39) decanted from the second decantation receptacle (50) into the mixing receptacle (47).

5. (original) Device according to claim 4, characterized by the fact that said extraction and transport means are constituted by a conveyor belt (55) arranged in the bottom of the second decantation receptacle (50) and extending just above the mixing receptacle (47) to discharge the first particles (39) into this latter.

6. (currently amended) Device according to claim 3, characterized by the fact that the first ultrasonic generator (33) is adjusted to a power comprised between 10 and 50 watts, ~~preferably between 40 and 100 watts~~, and by the fact that the second ultrasonic generator (53) is adjusted to a lower power, comprised between 1 and 30 watts, ~~preferably between 5 and 20 watts~~.

7. (new) A device for purifying machining liquids for electroerosion machines (10), comprising:

an electrode (17) adapted to machine a piece (15);

a machining liquid (14) comprising a dielectric liquid of at least first particles (39) of an additive adapted to facilitate electroerosion and second particles (38) of contamination arising from at least one of the electrode (17) and the piece (15),

the second particles having a higher density than the first particles;

at least one ultrasonic decantation device (11) comprising a first decantation receptacle (30) holding the machining liquid in which machining liquid is disposed a first ultrasonic emission member (31) connected to a first ultrasonic generator (33) with adjustable power such that the second particles (38) decant, whilst the first particles (39) remain in suspension in the dielectric liquid, wherein exclusively ultrasounds are used by said ultrasonic decantation device;

a supply means (34, 35) for supplying contaminated machining liquid into the first decantation receptacle (30) and at least one opening (36) provided in the first decantation receptacle for discharging purified machining liquid containing the first particles;

a supplemental means (40) to separate third particles (41) of contamination constituted by colloidal carbon from the decomposition of the machining liquid, this supplemental means (40) comprising a second ultrasonic decantation device (45) with a second decantation receptacle (50) in which is disposed a second ultrasonic emission member (51) connected to a second ultrasonic generator (53), the power of this latter being adjusted such that the first particles (39) decant, whilst the third particles (41) remain in suspension in the machining

liquid, this second decantation receptacle (50) comprising an inlet connected to said opening (36) and said supplemental means using exclusively ultrasounds to decant;

wherein the supplemental means (40) comprise a mixing receptacle (47) with mixing members (60), filtering elements (46) for the machining liquid obtained by decantation at the outlet of the second decantation receptacle (50) and arranged to retain by filtration the third particles (41), a supply conduit (59) for the filtered dielectric liquid from the filtration elements (46) to said mixing receptacle (47) and extraction transport means (55) arranged to transport the first particles (39) decanted from the second decantation receptacle (50) into the mixing receptacle (47).

8. (new) Device according to claim 7, characterized by the fact that said extraction and transport means are constituted by a conveyor belt (55) arranged in the bottom of the second decantation receptacle (50) and extending just above the mixing receptacle (47) to discharge the first particles (39) into this latter.

9. (new) Device according to claim 7, characterized by the fact that the first ultrasonic generator (33) is adjusted to a power comprised between 10 and 50 watts, and by the fact that the second ultrasonic generator (53) is adjusted to a lower power, comprised between 1 and 30 watts.

10. (n w) Devic according to claim 3, characterized by the fact that the first ultrasonic generator (33) is adjusted to a power comprised between 40 and 100 watts, and by the fact that the second ultrasonic generator (53) is adjusted to a lower power, comprised between 5 and 20 watts.

11. (new) A device for purifying machining liquids for electroerosion machines (10), comprising:

an electrode (17) adapted to machine a piece (15);

a machining liquid (14) comprising a dielectric liquid of at least first particles (39) of an additive adapted to facilitate electroerosion and second particles (38) of contamination arising from at least one of the electrode (17) and the piece (15),

the second particles having a higher density than the first particles; and

an ultrasonic decantation device (11) comprising a first decantation receptacle (30) holding the machining liquid in which machining liquid is disposed a first ultrasonic emission member (31) connected to a first ultrasonic generator (33) with adjustable power such that the second particles (38) decant, whilst the first particles (39) remain in suspension in the dielectric liquid, wherein exclusively ultrasounds are used by said ultrasonic decantation device.

12. (new) Device according to claim 11, characterized by the fact that it comprises supply means (34, 35) for supplying contaminated machining liquid into the first decantation receptacle (30) and at least one opening (36) provided in this latter for discharging purified machining liquid containing the first particles (39).

13. (new) Device according to claim 12, characterized by the fact that it comprises supplemental means (40) to separate third particles (41) of contamination constituted by colloidal carbon from the decomposition of the machining liquid, these supplemental means (40) comprising a second ultrasonic decantation device (45) with a second decantation receptacle (50) in which is disposed a second ultrasonic emission member (51) connected to a second ultrasonic generator (53), the power of this latter being adjusted such that the first particles (39) decant, whilst the third particles (41) remain in suspension in the machining liquid, this second decantation receptacle (50) comprising an inlet connected to said opening (36).

14. (new) Device according to claim 13, characterized by the fact that the supplemental means (40) comprise a mixing receptacle (47) with mixing members (60), filtering elements (46) for the machining liquid obtained by decantation at the outlet of the second decantation receptacle (50) and arranged to retain by filtration the third particles (41), a supply conduit (59) for

the filtered dielectric liquid from the filtration elements (46) to said mixing receptacle (47) and extraction transport means (55) arranged to transport the first particles (39) decanted from the second decantation receptacle (50) into the mixing receptacle (47).

15. (new) Device according to claim 14, characterized by the fact that said extraction and transport means are constituted by a conveyor belt (55) arranged in the bottom of the second decantation receptacle (50) and extending just above the mixing receptacle (47) to discharge the first particles (39) into this latter.

16. (new) Device according to claim 13, characterized by the fact that the first ultrasonic generator (33) is adjusted to a power comprised between 10 and 50 watts, and by the fact that the second ultrasonic generator (53) is adjusted to a lower power, comprised between 1 and 30 watts.

17. (new) Device according to claim 13, characterized by the fact that the first ultrasonic generator (33) is adjusted to a power comprised between 40 and 100 watts, and by the fact that the second ultrasonic generator (53) is adjusted to a lower power, comprised between 5 and 20 watts.